TELEDYNE RELAYS

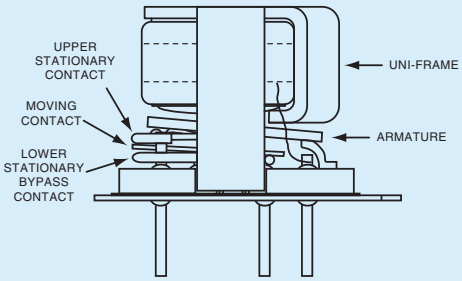
A Unit of Teledyne Electronics and Communications

HIGH REPEATABILITY, NORMALLY OPEN, BYPASS RF RELAYS

SERIES RF320 RF323

SERIES DESIGNATION	RELAY TYPE
RF320	Repeatable, RF, N.O. bypass relay
RF323	Sensitive, repeatable, RF, N.O. bypass relay

INTERNAL CONSTRUCTION



PERFORMANCE FEATURES

The ultraminiature RF320 and RF323 relays are designed with an internal bypass (through path), when the coil is energized, to provide low insertion loss and VSWR through the bypass and simplicity of design for the user. Relays have improved RF insertion loss repeatability over the frequency range from dc to 3 GHz. Highly suitable for use in attenuator, linear amplifier and other RF circuits. The RF 320 and RF323 feature:

- N.O. bypass configuration.
- Repeatable insertion loss.
- Broad bandwidth.
- Metal enclosure for EMI shielding.
- Ground pin option to improve case RF grounding.
- High isolation between control and signal paths.
- High resistance to ESD.

CONSTRUCTION FEATURES

The following unique construction features and manufacturing techniques provide excellent resistance to environmental extremes and overall high reliability.

- Uni-frame motor design provides high magnetic efficiency and mechanical rigidity.
- Minimum mass components and welded construction provide maximum resistance to shock and vibration.
- Advanced cleaning techniques provide maximum assurance of internal cleanliness.
- Gold-plated precious metal alloy contacts ensure reliable switching.

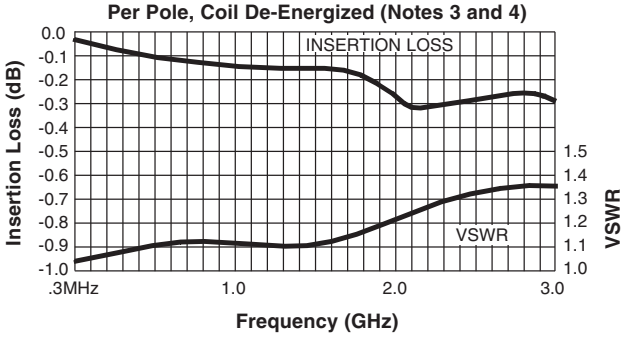
ENVIRONMENTAL AND PHYSICAL SPECIFICATIONS		
Temperature (Ambient)	**Storage**	–65°C to +125°C
	Operating	–55°C to +85°C
Vibration (General Note 1)		10 g's to 500 Hz
Shock (General Note 1)		30 g's, 6 msec, half-sine
Enclosure		Hermetically sealed
Weight	RF320	0.09 oz. (2.55g) max.
	RF323	0.16 oz. (4.5g) max.

SERIES RF320 AND RF323

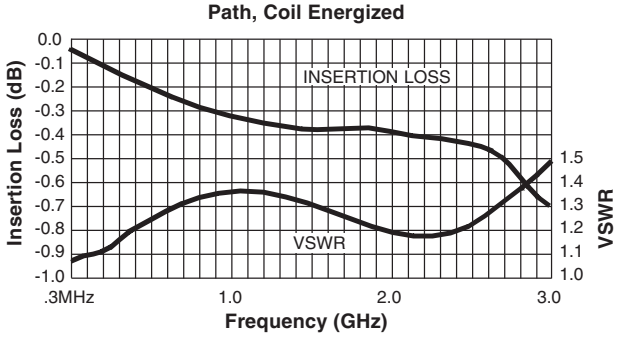
TYPICAL RF CHARACTERISTICS (Notes 1, 2 and 3)

INSERTION LOSS AND VSWR CHARACTERISTICS RF320 RELAYS

Typical Characteristics for N.C. Contacts, Per Pole, Coil De-Energized (Notes 3 and 4)

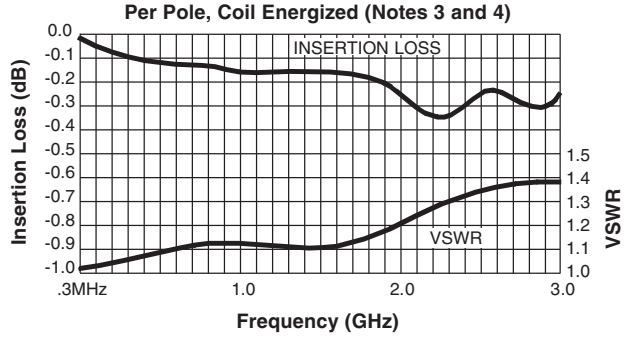


Typical Characteristics for N.O. Bypass Path, Coil Energized

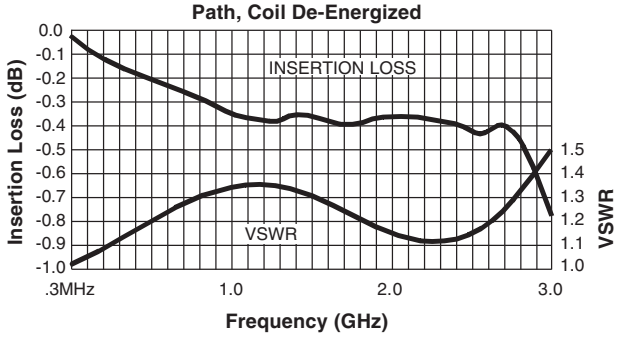


INSERTION LOSS AND VSWR CHARACTERISTICS RF323 RELAYS

Typical Characteristics for N.C. Contacts, Per Pole, Coil Energized (Notes 3 and 4)

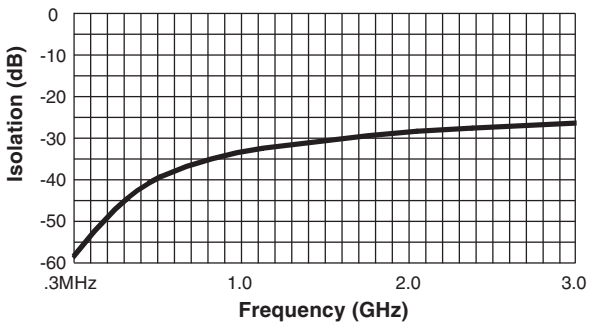


Typical Characteristics for N.O. Bypass Path, Coil De-Energized

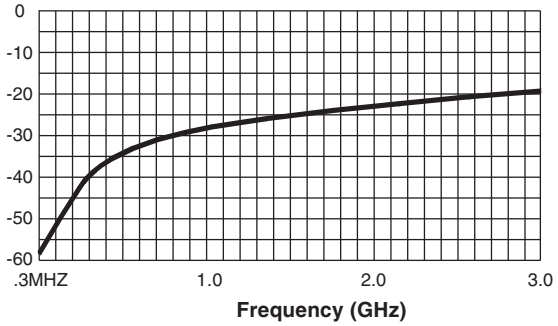


ISOLATION CHARACTERISTICS RF320 AND RF323 RELAYS

Isolation Pole to Pole (Coil De-Energized) (Note 5)



Isolation N.C. Contact to N.O. Bypass Path (Coil Energized) (Note 6)



RF NOTES

1. Test conditions:
   - *a.* Fixture: .031" copper clad, reinforced PTFE, RT/duroid® 6002 with SMA connectors. (RT/duroid® is a registered trademark of Rogers Corporation.)
   - *b.* Relay header is not soldered to ground plane or connected to ground via ground pin.
   - *c.* Test performed at room ambient temperature.
   - *d.* Terminals not tested were terminated with 50-ohm load.
   - *e.* Contact signal level: 0 dBm.
2. Data presented herein represents typical characteristics and is not intended for use as specification limits.
3. Data is per pole.
4. Measurement points are from pins 2 & 4 to pins 6 & 8.
5. Data is the average of both N.C. contacts to the bypass path.
6. Relays operate at frequencies above 3 GHz with reduced RF performance characteristics.

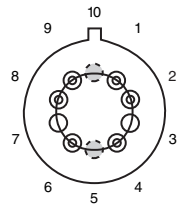
SERIES RF320 AND RF323
GENERAL ELECTRICAL SPECIFICATIONS (@25°C)

Contact arrangement		N.C. side (coil de-energized)	N.O. side (coil energized)
		DPST, Normally Closed	SPST, Normally Open Double Make
Rated duty		Continuous	
Contact resistance (General note 2)		0.15 ohm max. initial (measured 1/8" from the header)	
Contact load rating		Low level: 10 to 50 µA, 10 to 50 mV	
Contact life rating		10,000,000 cycles typical at low level	
Coil operating power		RF320: 450 mW typical @ nominal rated voltage RF323: 200 mW typical @ nominal rated voltage	
Operate time	**RF320**	4.0 ms. max.	
	RF323	6.0 ms. max.	
Release time	**RF320**	3.0 ms. max.	
	RF323	3.0 ms. max.	
Intercontact capacitance		0.4 pF typical	
Insulation resistance		1,000 MΩ min. (between mutually isolated terminals)	
Dielectric strength		350 VRMS / 60 Hz @ atmospheric pressure	

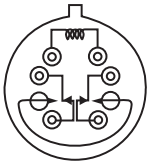
DETAILED ELECTRICAL SPECIFICATIONS (@25°C)

BASE PART NUMBERS		**RF320-5 RF323-5**	**RF320-12 RF323-12**
Coil voltage, nominal, VDC		5.0	12.0
Coil resistance, ohms ± 20%	**RF320**	50	390
	RF323	100	850
Pick-up voltage max, VDC		3.6	9.0

OUTLINE DIMENSIONS



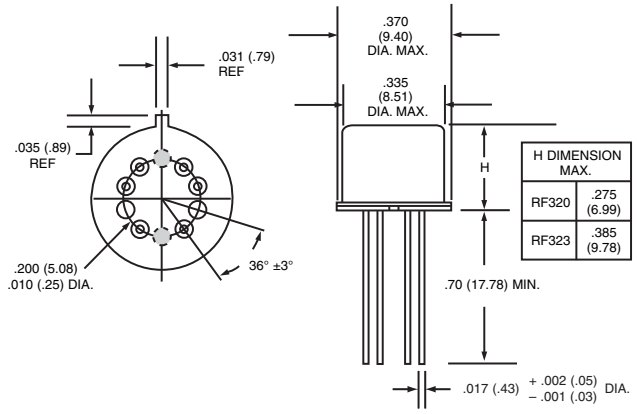
TERMINAL NUMBERING



SCHEMATIC

- HEADER DIMENSIONS, TERMINAL NUMBERING AND SCHEMATIC ARE AS VIEWED FROM THE TERMINALS.
- DIMENSIONS ARE IN INCHES (MILLIMETERS).
- POSITIONS 5 AND 10 ARE FOR UNINSULATED CASE GROUND OPTIONS. SEE APPENDIX.
- NO PROTRUSION BELOW BOTTOM OF HEADER WHEN GROUND PINS ARE INSTALLED.
- TO ORDER THE CASE GROUND OPTION, AFTER THE SERIES DESIGNATOR, ADD "Y" TO THE PART NUMBER FOR POSITION 5 OR "Z" TO THE PART NUMBER FOR POSITION 10.

EXAMPLE: RF320Y-COIL VOLTAGE



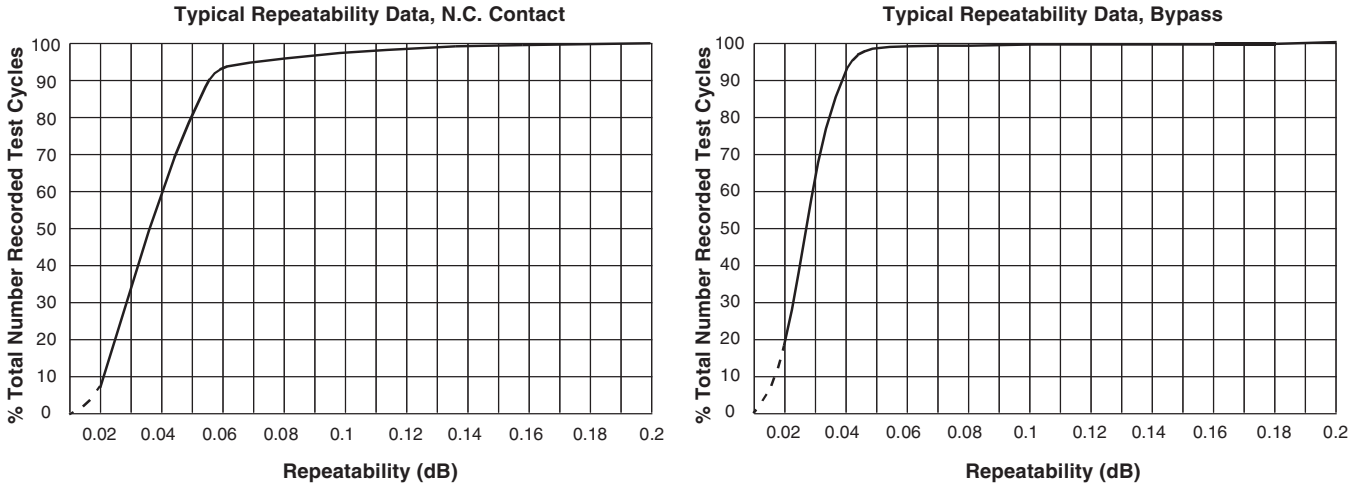
EXTERNAL DIMENSIONS

GENERAL NOTES

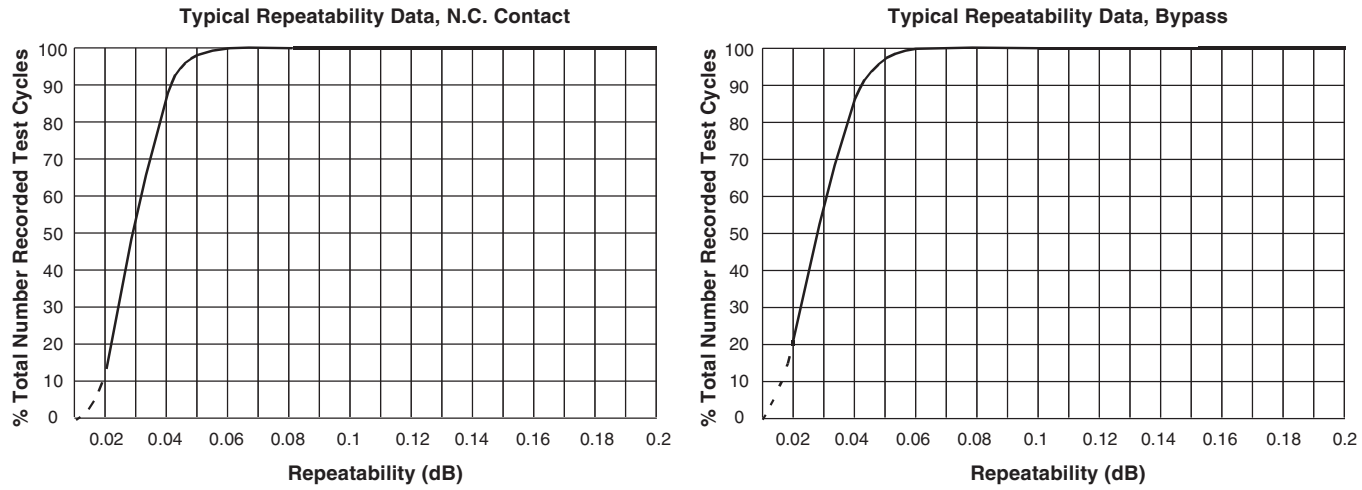
1. Relays will exhibit no contact chatter in excess of 10 µsec or transfer in excess of 1 µsec.
2. Contact resistance value applies to each closed contact as well as the bypass path.

SERIES RF320 AND RF323
TYPICAL INSERTION LOSS REPEATABILITY CHARACTERISTICS

REPEATABILITY CHARACTERISTICS RF320 RELAYS



REPEATABILITY CHARACTERISTICS RF323 RELAYS



RF INSERTION LOSS REPEATABILITY NOTES

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   - *b.* Relay header is not soldered to ground plane or connected to ground via ground pin.
   - *c.* Test performed at room ambient temperature.
   - *d.* Contact signal level: 0 dBm.
2. Data presented herein represents typical characteristics and is not intended for use as specification limits.
3. N.C. path contacts connected in series externally.
4. Insertion loss repeatability measured over frequency range from .3 MHz to 3 GHz.